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Effect of Discharge on Paper Packaging Factory Waste Water in Erode District by Using GIS

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ABSTRACT: The management of industrial wastewater is one of the most pressing problems of the modern era in developing nations. Industrial wastewater effluents are directly dumped into a land, a natural drain, in these nations. Before being released, some of these industrial wastewater effluents have undergone insufficient or no treatment. Urbanization and industrial activity have recently resulted in environmental degradation in developing nations. The receiving water bodies' degradation is caused by the quality of industrial wastewater effluents. This is because industrial wastewater effluents that have been improperly or not at all treated may eutrophicate the receiving water bodies. In this project to study the effect of discharge on paper packaging wastewater in erode district using GIS and remote sensing. It is necessary to properly treat wastewater before release in order to adhere to the regulations and laws governing it. The correct treatment of industrial wastewater effluents is required to reduce the risk to the environment and public health. Regular monitoring, appropriate and suitable treatment, cautious planning, and appropriate laws are advised to achieve unpolluted discharge of industrial wastewater into the receiving water bodies.

KEYWORDS: Physio-chemical, Parameters, Geography information system, Total dissolved solids, COD, BOD

I. INTRODUCTION

Wastewater is water used by the community wastewater includes physical, chemical, and biological products that depend on community water use, business and industry pressure, weather and infiltration/inflow. Section remaining 0.06% are dissolved or suspended solids in water Section dissolved and suspended solids in wastewater containing organic and inorganic matter. Organic matter includes carbohydrates, oil, oil, oil, surfactants, proteins, pesticides and agrochemicals, volatile organic compounds, and other toxic substances. Inorganic will cover heavy metal, nutrients (nitrogen and phosphorus), pH, alkalinity, chloride, sulfur, and other inorganic pollution. Gases such as carbon dioxide, nitrogen, oxygen, hydrogen sulfide and methane may be present in wastewater. The primary objective of this study is to determine the sources of pollution in wastewater (WW) treated in wastewater treatment systems (WWTS).

II. OBJECTIVES

The main goals of the study were:

- To determine the sources of potentially toxic elements and organic pollutants in domestic, commercial, and urban run-off wastewater, which end up in the WW collecting system.
- To evaluate the percentage of inorganic and organic pollutants released in the environment with the treated effluents.
- To review wastewater and sewage sludge treatment processes and possible measures to prevent pollution at source. The most important practices to treat wastewater and sewage sludge in Europe will be closely examined.
- Based on an overall assessment of the existing data from various sources, to identify further research directions in those areas with insufficient data.

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| Volume 6, Issue 7, July 2023 |

III. EFFLUENTS DISPOSAL AND ITS ENVIRONMENTAL CONSEQUENCES

- Increasing P^H of soil
- Changing soil color & texture.
- Imbalance of macro and micronutrients in soil.
- Negative effect on soil microbial activities & disturb all natural cycles.
- Decrease in germination percentage.
- Adverse effect on seedling growth.
- Increase in organic load.
- Depletion of oxygen supply in soil.

IV. PROCEDURE TO EVALUATE PERCENTAGE OF POLLUTION IN EFFLUENT

Step 1: Study the area of Erode
Step 2: Study their effects of river and land pollutant
Step 3: Using GIS software analysis physio chemical parameter

V. PAPER PACKAGING INDUSTRY

The manufacture of paper consists of two main operations: the production of pulp, which is then transformed into paper or cardboard. Industrials can integrate both manufacturing processes.

1. PAPER PACKAGE MANUFACTURE

Unbleached pulp manufacturing processes

- Paper pulp is manufactured from the cellulose fibers contained in wood.
- Several processes are used to destroy the wood and isolate the cellulose from the lignin

2. BLEACHING

- For numerous applications unbleached pulp cannot be used (colour, impermeabilities etc.,) It must therefore be bleached.
- Effluents from bleaching works contain compounds with organic chlorine links, measured as AOX. In the entire paper pulp plant, this operation discharges the highest number of pollutants into the water.

VI. LITERATURE REVIEW

➢ R. ABDLE AHAB. K. MOA WAD and ENAS ABOUTALE “Wastewater Management and Resource Recovery in Hard Paper Industry: A Case Study”2010

➢ SHIVNARAYAN SINGH “Study of Waste Water Effluent Characteristics Generated form Paper Industries”2015

➢ BHARATI S. SHETEA AND N.P. SHINKAR “Dairy Industry Wastewater Sources, Characteristics & Its Effects on Environment”2013

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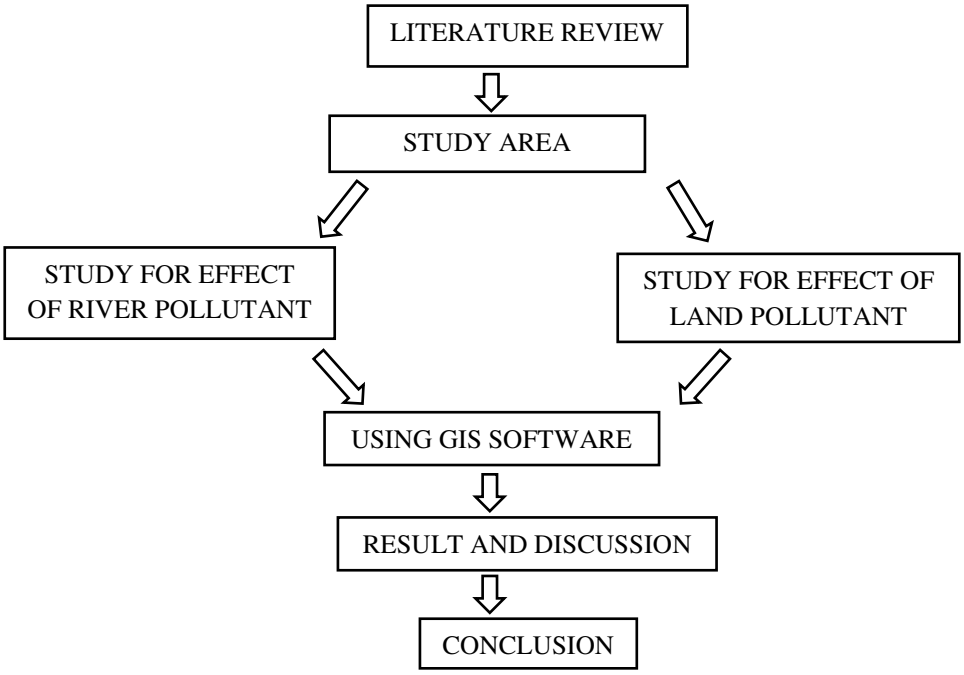
| Volume 6, Issue 7, July 2023 |

VII. METHODOLOGY



VIII. APPLICATION OF GEOGRAPHY INFORMATION SYSTEM

A Geographic information system (GIS) is a computer program for mapping and analysing the geographic area that exists on Earth. Section (Occurrences) is integrated with the custom view and provides geographic analysis results from the map.

IX. DATA COLLECTION BY GIS

To determine the accident-prone zones and traffic congestion, data are collected from respective departments. Data are classified into two i.e., spatial, and non-spatial data.

X. ANALYTICAL METHOD OF PHYSICO CHEMICAL PARAMETER OF PAPER MILL EFFLUENT

S.NO	PHYSICO-CHEMICAL PARAMETERS	METHOD APPLIED FOR LABORATORY ANALYSIS
1	P^H	Handy P^H
2	Total suspended solids (TSS)	Gravimetric, residue drying 100^oc
3	Total dissolved solids (TDS)	Gravimetric, oven drying 100^oc
4	Chemical oxygen Demand (COD)	Potassium dichromate closed reflux method
5	Biochemical oxygen demand (BOD)	5 days incubation at 200^oc
6	Colour	Spectrophotometer

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| Volume 6, Issue 7, July 2023 |

XI. SOME CHARACTERISTICS OF PAPER INDUSTRY EFFLUENTS AT DIFFERENT LOCATIONS DOWNSTREAM THE MAIN DRAIN

ID	NAME	P^H	TSS	TDS	COD	BOD	EC	TS
1	Kodumudi	7.45	460	1320	4357	306	1198	1840
2	Vadugapatti	7.21	240	1120	3983	308	2313	1360
3	Pasur	7.42	200	1000	1736	408	1719	1200
4	Erode	8.08	80	480	647	306	1190	560
5	Pallapalayam	8.04	480	750	1532	306	4098	1180
6	Perundurai	7.8	340	460	1123	306	2601	1100
7	Sirukkalanchi	8.19	150	160	236	408	2139	160
8	Elathur	7.67	80	1500	598	408	2232	1560
9	Talamalai	8.63	60	2110	760	420	1072	2100
10	Thingalur	7.63	450	1350	920	325	1403	1320
11	Athani	8.63	320	1250	1135	450	1524	650
12	Lakkampatti	7.69	150	1450	1245	310	1520	453
13	Hassanur	7.21	310	950	1350	308	1320	946
14	Burgur	8.73	350	620	3042	410	1120	1130
15	Anthiyur	7.5	221	320	2056	340	1452	1240
16	Gundri	8.02	125	450	1236	430	1254	1142
	Tolerance limits for irrigation*	5.5-9.0a	200a	1000a	250a	100a	2.0-10.0b	---
	a CPCB (1975), b Paliwal and Yadav (1976)							

XII. ANALYSIS OF ERODE AREA OF PHYSICO CHEMICAL PARAMETER

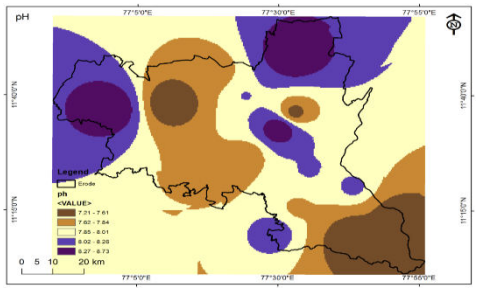

Fig.1 P^H value in Study Area

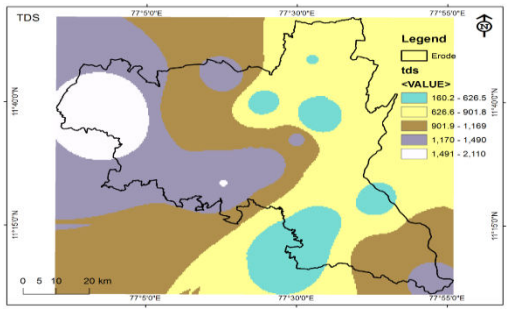

Fig.2 TDS value in Study Area

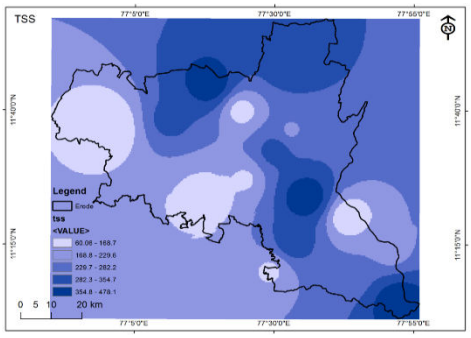

Fig.3 TSS value in Study Area

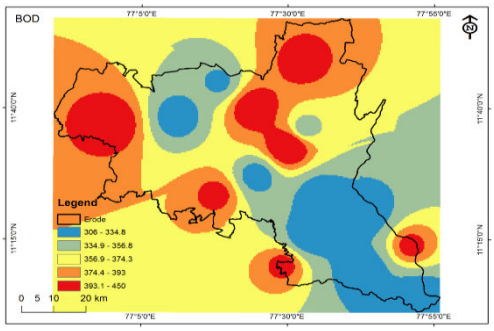

Fig.4 BOD Value in Study Area

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| Volume 6, Issue 7, July 2023 |

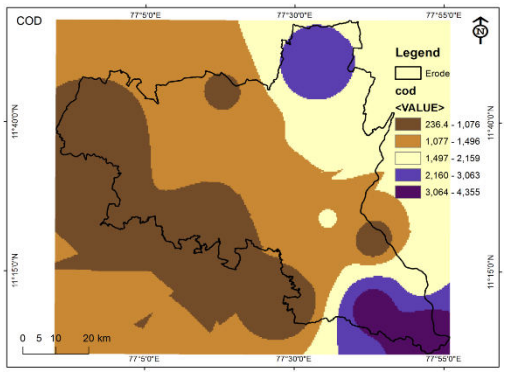

Fig.5 COD Value in Study Area

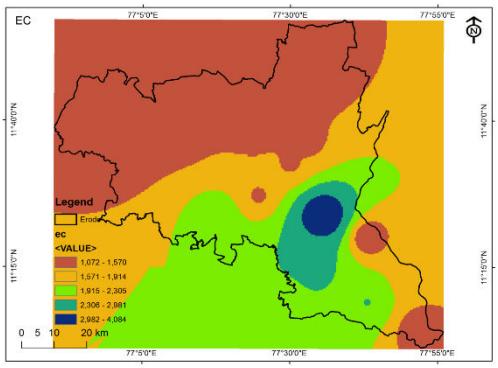

Fig.6 EC Value in Study Area

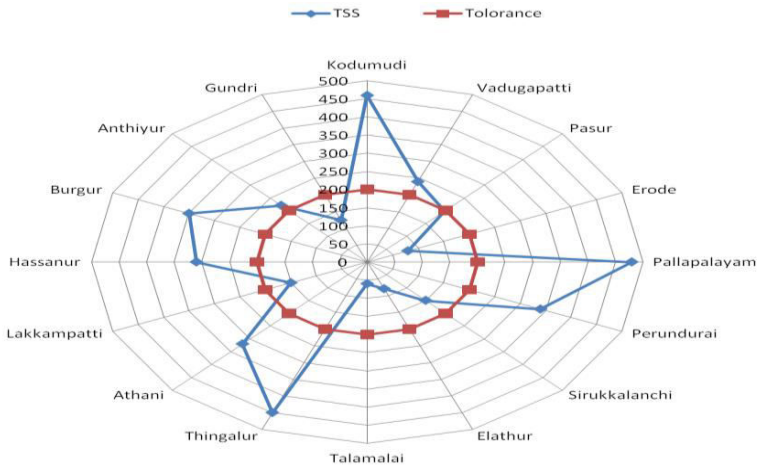

Fig.7 Graph shows the P^H Tolerance limit

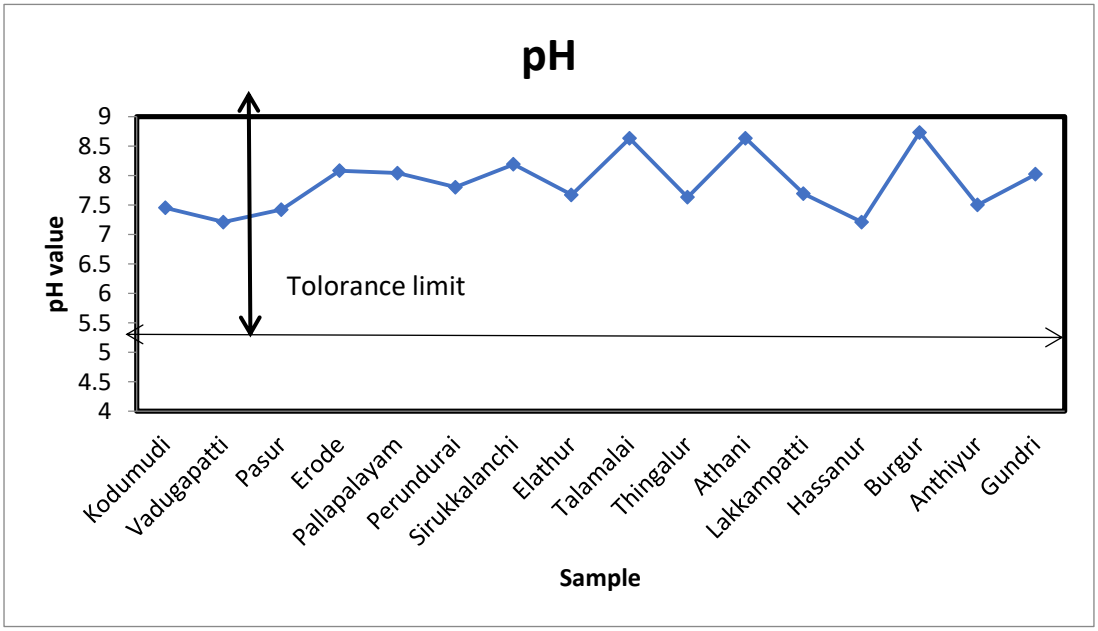

Fig.8 Graph shows the TSS Tolerance limit

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XIII. ACKNOWLEDGEMENT

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XIV. CONCLUSION

The primary goal for the paper-manufacturing sector is to minimize and eventually stop the discharge of effluent. Frist, wastewater can be reduced or even eliminated through the reform process, as well as its toxicity. Reusing wastewater is the second step. Utilize recirculating water systems and reuse or recycle manufacturing wastewater after adequate treatment. The third step is to reduce the amount of pollutants in the wastewater and salvage beneficial items. The raw materials and finished goods that have been lost in the wastewater are, to the greatest extent feasible, removed from the water and retrieved immediately. In addition to minimizing production costs, it will also decrease wastewater concentration. To prevent damaging the water in nature, the treated wastewater needs to be handled carefully. Comprehensive regional governance, rational distribution, and comprehensive planning should all be used in the paper manufacturing industry. Frist, water pollution needs to be considered into account while developing regional planning, urban construction planning, and industrial area planning. Any potential water pollution should be addressed with preventative measures. Second, thorough planning and treatment of the causes of water contamination. Thirdly, put rules in place and stop any emissions of industrial wastewater and sewage. In order to improve administration and minimize down on the number of pollution sources, industry wastewater should be treated centrally. In order to improve administration and minimize down on the number of pollution sources, industry wastewater should be treated centrally.

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